

**ENVIRONMENTAL ASSESSMENT  
ON PROPOSED REISSUANCE OF  
EPA's NPDES GENERAL PERMITS FOR CAFOs  
IN  
TEXAS, NEW MEXICO AND OKLAHOMA**

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## 1.0 INTRODUCTION

### 1.1 Background

In 1993, EPA Region 6 issued National Pollutant Discharge Elimination System (NPDES) General Permits (GPs) for Concentrated Animal Feeding Operations (CAFOs) in Louisiana (LAG010000), Oklahoma (OKG010000), New Mexico (NMG010000), and Texas (TXG010000). Section 511(c)(1) of the Clean Water Act (CWA) exempts NPDES permit actions, except for “new source” permit actions, from the environmental review requirements of the National Environmental Policy Act of 1969 (NEPA). Because CAFOs of more than 1,000 animal units constructed after 1974 are “new sources” as defined by CWA,<sup>1</sup> issuance of NPDES permits to those facilities is subject to NEPA review. EPA Region 6 issued an environmental assessment (EA) and finding of no significant impact (FNSI) on its 1993 permit action. Since then, EPA has engaged in supplemental site-specific NEPA review on each notice of intent to be covered (NOI) it has received from new source CAFOs. Of approximately 825 CAFO’s covered by the ‘93 GPs, about 100 were subject to NEPA review. In its site-specific NEPA review of those new source CAFOs, EPA found only one group in which potentially significant environmental effects justified preparation and publication of an environmental impact statement (EIS). After EPA informed it that an EIS would be necessary, the operator of those CAFOs subsequently withdrew its NOIs. Discharges from that group of facilities have thus not been authorized under CWA.

The CAFO general permits EPA issued in 1993 expired on March 10, 1998. On June 26, 1998, EPA Region 6 proposed to reissue the general permits for CAFOs in Texas, Oklahoma, and New Mexico<sup>2</sup> (63 Fed. Reg. 34874). EPA proposed to require enhanced record-keeping requirements, require CAFO operators to use both phosphorus and nitrogen as limiting pollutants for determining land application rates for CAFO generated waste/wastewater, and extend

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<sup>1</sup> CWA §306(a)(2) defines “new source” as “any source, the construction of which is commenced after the publication of proposed regulations prescribing a standard of performance under this section which will be applicable to such source...” EPA has promulgated a new source performance standard for CAFOs with more than 1,000 animal units, but has never proposed a similar new source performance standard for smaller CAFOs.

<sup>2</sup> Since issuing the 1993 CAFO general permits, EPA has authorized the Louisiana Department of Environmental Quality (LDEQ) to administer the NPDES program in Louisiana. LDEQ is now responsible for authorizing CAFO discharges in Louisiana and EPA has not proposed to reissue the Louisiana CAFO general permit. After proposing to reissue the Texas CAFO general permit, EPA authorized the Texas Natural Resource Conservation Commission (TNRCC) to administer a substantial part of the NPDES program in Texas, including authorization of most CAFO discharges. Under an EPA/TNRCC memorandum of agreement on the Texas NPDES program; however, EPA may issue NPDES permits it proposed before authorizing TNRCC’s program.

regulation to copermitees who treat or dispose of waste/wastewater offsite on behalf of CAFO operators at greater than agronomic rates in nutrient impaired watersheds. On September 11, 1998, EPA reopened the comment period on the proposed permits and identified six specific issues on which it hoped to receive additional comment. (63 Fed. Reg. 48731)

EPA has received numerous comments on the proposed permit actions which it is now considering. This EA has been prepared to assist EPA in determining whether its proposed reissuance of NPDES general permits for CAFOs in New Mexico, Oklahoma, and Texas may significantly affect the quality of the human environment and thus require preparation of an EIS on that action. In some areas, the Agency now prefers alternatives which differ somewhat from those it proposed and this EA will also serve to promote further public participation.

## **1.2 General Permit Information**

CWA §301(a) prohibits the point source discharge of pollutants to waters of the United States except in compliance with an NPDES permit issued under CWA §402. CAFOs are point sources by statutory and regulatory definition and subject to NPDES permitting requirements at 40 CFR §122.23 and 40 CFR Part122, Appendix B. EPA is proposing to reissue the NPDES general permits for CAFOs in New Mexico (NMG800000, NMG810000), Oklahoma (OKG800000, OKG810000), and Texas (TXG800000, TXG810000). All CAFOs in those states, except duck facilities established prior to 1974,<sup>3</sup> will be allowed to obtain discharge coverage under the general permits unless site-specific review indicates a specific CAFO would be more appropriately regulated under an individual permit. Duck facilities established after 1974 are covered by the proposed permits. Facilities subject to the reissued permits will be authorized to discharge pollutants to waters of the United States only in accordance with the "no discharge" terms of the permits. Copies of Region 6's proposed NPDES GPs for CAFOs are included in Appendix A to this EA.

Under the proposed permits, discharges from the lagoons or retention basins in which CAFOs collect and store animal waste/wastewater will be allowed only as a result of chronic or catastrophic rainfall and only from a lagoon or retention basin which is designed, constructed, maintained, and operated to store a 25 year, 24 hour storm event and all waste/wastewater which may reasonably be expected to accumulate in the lagoon or basin. CAFO operators must prepare and implement pollution prevention plans (PPP) to document the waste management controls used to prevent water pollution and associated nuisance impacts which might otherwise be associated with their facilities. Many aspects required of a PPP can be met through the use of a

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<sup>3</sup>The effluent guidelines for these duck facilities are for biological treatment which is inconsistent with the "no discharge" requirements of the proposed permits. These discharges are best addressed with site specific, water quality permitting. The effluent limitations established for existing duck CAFOs limit total biological oxygen demand discharged per 1000 ducks to 1.66 kg as a daily maximum and 0.91 kg as a 30-day average. Pathogen requirements in the permit limit fecal coliform discharged to 400 colonies/100 ml of discharge.

comprehensive nutrient management plan (CNMP). Each facility must retain a copy of its PPP on site for EPA inspection. In addition, EPA has proposed to regulate offsite land application of CAFO waste/wastewater. A CAFO permittee may request to be excluded from coverage under the General Permit by submitting a completed notice of termination form or by applying for an individual NPDES permit.

Each new or significantly expanded new source CAFO, i.e., a CAFO with more than 1,000 animal units, must submit an environmental information document (EID) with its notices of intent to be covered, so that EPA may perform site-specific NEPA review leading to issuance of a FNSI or a completed EIS before providing discharge authorization under the general permits. This additional review currently includes site-specific characteristics factored into a Cumulative Risk Index Analysis (see Appendix B). EPA has already performed a site-specific NEPA review of each new source CAFO which obtained coverage under the expired general permits. Accordingly, those facilities will have to provide EIDs with their NOIs only if there have been significant changes to their facilities or operations.<sup>4</sup>

### **1.3 Project Operations**

CAFOs to be covered by EPA's proposed NPDES general permits include animal feeding and animal waste management operations, devoted to livestock production, development, breeding, feed production, and slaughter and packing. Facility components generally include animal barns, waste/wastewater retention structures or lagoons, and areas for the land application of waste water from the lagoons. As a class, CAFOs involve the same or substantially similar types of operations; discharge the same types of waste; require the same effluent limitations, operating conditions, or standards of disposal; and require the same or similar monitoring. Discharges from CAFOs are thus appropriately regulated under NPDES general permits.

CAFOs are new and existing operations which stable or confine and feed or maintain, for a total of 45 days or more in any 12-month period, the number of animals specified in any of the following categories:

- a. 300-999 slaughter or feeder cattle;
- b. 200-699 mature dairy cattle (whether milkers or dry cows);
- c. 750-2,499 swine weighing over 55 pounds;
- d. 150-499 horses;
- e. 3,000-9,999 sheep or lambs;
- f. 16,000-54,999 turkeys;
- g. 30,000-99,999 laying hens or broilers when the facility has unlimited continuous flow watering;

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<sup>4</sup> CWA §306(a)(2) defines "new source" as "any source, the construction of which is commenced after the publication of proposed regulations prescribing a standard of performance under this section which will be applicable to such source..." EPA has promulgated a new source performance standard for CAFOs with more than 1,000 animal units, but has never proposed a similar new source performance standard for smaller CAFOs.

- h. 9,000-29,999 laying hens or broilers when the facility has liquid manure handling system;
- i. 1,500-4,999 ducks; or
- j. 300-999 animal units from a combination of slaughter steers and heifers, mature dairy cattle, swine over 55 pounds, and sheep.

In addition, EPA may designate a smaller animal feeding operation a CAFO if it determines, after an onsite inspection, that it is a significant contributor of pollution to waters of the United States.

## **2.0 EPA's ALTERNATIVES**

### **2.1 No. Action**

If EPA does not renew the expired general permits (or issue superceding individual permits) the expired permits will continue to apply to existing CAFOs by operation of law (5 U.S.C. §556). No new CAFOs would be authorized to discharge pollutants to waters of the United States in Oklahoma and New Mexico. In Texas, no new CAFOs would be authorized to discharge pollutants to waters of the United States unless and until TNRCC authorized those discharges by permit. Existing CAFOs which obtained coverage under the now expired general permits would remain subject to the provisions of those permits, but would not be subject to more stringent provisions EPA may include in the reissued permits. Third parties treating or disposing of waste/wastewater on behalf of CAFOs at greater than agronomic rates would be unable to obtain discharge authorization under a general permit.

### **2.2 Delayed Action**

If EPA determines, after interagency coordination and consideration of public comment on this EA, that reissuance of the CAFO general permits may significantly affect the quality of the human environment, it will delay its NPDES permit action (at least as to reissuing a general permit authorizing discharges from "new source" CAFOs), pending further NEPA review. That additional review would include a scoping process to identify the issues and concerns to be evaluated in an EIS, preparation and distribution of a Draft EIS for a 45-days review and comment period, public hearings on the Draft EIS, preparation and distribution of a Final EIS for a 30-days review and comment period, and preparation and distribution of a Record of Decision documenting the end of the EIS process and EPA's final decision. The entire process could take as long as two years and, during that time, the status quo (as described for the "no action" alternative) would remain unchanged unless EPA decided to reissue general permits for non "new source" CAFO's in a permitting action not subject to NEPA.

### **2.3 Reissued General Permits**

There are various combinations of alternatives available to EPA if it reissues the expired general permits in Texas, Oklahoma, and New Mexico. They include:

### **2.3.1 One Unchanged General Permit for All CAFOs**

EPA may reissue a general permit without significant changes from the expired general permit. This would allow new CAFOs to obtain discharge authorization, but would result in no increased water quality protection. Third parties treating or disposing of waste/wastewater on behalf of CAFOs would be unable to obtain discharge authorization, but would also be subject to no record keeping or reporting requirements.

### **2.3.2 One Changed General Permit for All CAFOs**

EPA may reissue a general permit with significant changes from the expired general permit. This would allow new CAFOs to obtain discharge authorization under a general permit and would probably result in increased water quality protection. If the permit contained conditions addressing offsite treatment/disposal of waste/wastewater, third parties treating or disposing of waste/wastewater on behalf of CAFOs could obtain discharge authorizations and would be subject to record keeping and reporting requirements under a general permit. Because water quality needs vary from watershed to watershed, however, some operators might be subject to unnecessarily stringent or unduly lax regulatory requirements.

### **2.3.3 Multiple General Permits**

EPA may reissue multiple general permits tailored to include requirements appropriate to the areas they cover. Operators would be subject to more stringent requirements in watersheds where water quality is more subject to impairment by nutrients in CAFO generated waste or wastewater. EPA's currently preferred alternative is to issue two fundamental general permits (with variations accommodating state requirements), one for watersheds impaired by nutrients and another for all other watersheds. As proposed, the "impaired watershed" permit would apply to CAFOs and offsite treatment/disposal facilities in watersheds the states have identified as impaired by nutrients in accordance with CWA §303(d). Although other means of distinguishing between impaired and unimpaired watershed segments may be available, deriving that information from the states' 303(d) lists currently appears to be the most practical approach consistent with the structure and requirements of CWA.

## **2.4 Offsite Treatment/Disposal Alternatives**

There are alternative approaches to regulating offsite disposal/treatment of CAFO waste/wastewater, not all of which are available to EPA in this action. They include:

### **2.4.1 Regulation of All Offsite Land Application**

EPA does not regard this alternative as prudent or legally defensible. The nutrients in CAFO wastes/wastewater are valuable fertilizer and soil conditioners for agricultural lands when properly applied and, at proper application rates, pose little or no risk to water quality. Moreover, CWA §502(14) exempts "agricultural stormwater discharges and return flows from

irrigated agriculture” from regulation under NPDES permits, regardless of their effects on water quality.

#### **2.4.2 No Regulation of Offsite Land Application**

This alternative essentially represents the status quo under the expired general permits. Although discharges of CAFO waste/wastewater from nonagricultural offsite land application violate CWA §301(a), such discharges are currently subject to no federal record keeping or reporting requirements and are difficult to detect, rendering enforcement actions against the dischargers rare. They moreover appear to be exerting significant adverse effects on water quality in some watersheds. If EPA regulates onsite land application practices by CAFO operators without regulating offsite treatment/disposal (including that performed by third parties), it may further encourage unregulated offsite disposal practices and attendant water quality impairment; CAFO operators managing their own waste treatment/disposal responsibly would presumably be placed at an economic disadvantage vis à vis their competitors relying on unregulated offsite disposal.

#### **2.4.3 Regulation of Nonagricultural Offsite Land Application, Emphasizing Practices Potentially Impairing Water Quality**

This is currently EPA’s preferred alternative. It offers adequate water quality protection without imposing unnecessary regulatory requirements on practices which have little potential for impairing water quality. As currently envisioned, this approach would differ in the degree of regulation imposed in impaired and unimpaired watersheds and on different land application rates.

In both impaired and non-impaired watersheds, land application (based on nitrogen and/or phosphorus loading) consistent with optimum agronomic application rates would be unregulated. State agricultural agencies recommend slightly different optimum phosphorus loading rates for normal agricultural operations. It is, for example, 130 lbs/acre in Oklahoma (Johnson et al., 1998; Johnson et al., 1997), 100 lbs/acre in Texas, and 80-100 lbs/acre (varying by crops) in Arkansas (Daniels et al., 1998). Based on this information, EPA Region 6 currently believes that 130 lbs/per acre is a reasonable cut-off point for distinguishing between normal agricultural practices and treatment/disposal practices under the CAFO general permits. Therefore, land application resulting in lower soil phosphorus loading rates would not be regulated under the permit. This phosphorus loading rate would provide little or no potential for causing or contributing to water quality problems.

Evaluation by the United States Natural Resources Conservation Service (NRCS) indicates that although phosphorus loading rates above 130 lbs/acre may not contribute to water quality impairment, loading rates above 400 lbs/acre would cause or contribute to water quality problems in most watersheds (USDA-NRCS, 1995). In watersheds already impaired by nutrients, phosphorus loading rates greater than 300 lbs/acre indicate that there is a phosphorus build up in the soil and that there is a valid environmental concern (USDA-NRCS, 1998, Daniels et al., 1998). EPA Region 6 currently believes that discharges from land treatment/disposal facilities at

loading rates over 130 lbs/acres are subject to regulation and should be regulated under the general permits. Because of their generally low potential for water quality impairment, however, facilities loading at a rate lower than 400 lbs/acre in unimpaired watersheds or 300 lbs/acre in impaired watersheds would not be required to submit NOIs to be covered by the general permits, but would be automatically covered as long as they complied with applicable permit provisions. However, the permits would authorize no discharges from facilities applying CAFO waste/wastewater to soils containing more than 300 lb/acre phosphorus in nutrient-impaired watersheds and 400 lb/acre in non-impaired watersheds. Such discharges would be authorized, if at all, only by individual NPDES permits. This would enable EPA to obtain additional information on those operations and render site-specific decisions on whether discharges from them should be authorized.

## **2.5 Individual Permit Alternatives**

The CWA does not require EPA to use general NPDES permits and individual NPDES permits are thus always an option for regulating specific discharges to waters of the United States. As a practical matter, however, it is far more efficient for EPA and regulated entities to use general permits when, as here, large numbers of similar discharges with similar effects must be regulated. The workload associated with issuing individual permits for all CAFOs in Texas, Oklahoma, and New Mexico would be unmanageable; new facilities could not obtain timely discharge authorization and existing facilities would continue to discharge under expired permits meriting a “new look” in light of current information on available control options and water quality needs. Nevertheless, situations may arise in which the controls afforded by general permits may be inappropriate for specific dischargers. EPA thus retains authority to require any facility otherwise subject to regulation under a general NPDES permit to apply for and obtain an individual NPDES permit under appropriate circumstances.<sup>5</sup> To assist it in making decisions on whether facilities submitting NOIs under the reissued CAFO general permits should be required to obtain individual permits, EPA is considering imposition of pre-submission screening procedures to identify potential adverse effects on endangered/threatened species in consultation with the U.S. Fish & Wildlife Service. In addition, EPA will continue to require new source CAFOs seeking initial discharge authorization to submit EIDs and EPA will perform site-specific NEPA review on those facilities before providing them coverage under the reissued permits. Supplemental EIDs will also be required for significantly changed facilities on which NEPA review has already been performed under either the expired or reissued general permits.

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<sup>5</sup> TNRCC would be the permitting authority for such individual permits in Texas, subject EPA oversight authority.

### **3.0 AFFECTED ENVIRONMENTS AND IMPACTS**

#### **3.1 Climate and Air Quality**

##### **3.1.1 Existing Conditions**

The climate within the three State area ranges from semiarid to subtropical. Summer temperatures to the south are over 100 degrees Fahrenheit (F), and winter temperatures drop below 0 degrees F to the north. The average annual rainfall is less than 10 inches to the west and over 60 inches to the east. Most precipitation (e.g., rain, sleet or snow) occurs in late spring through the winter months.

The wind velocity in springtime may reach 30 miles per hour (mph) with gusts of higher velocities. Winds frequently cause dust storms in the drier, desert areas of New Mexico and across the western parts of Oklahoma and Texas. Some land areas are eroded as a result of the wind (and rain), particularly where vegetation is sparse. Wind directions are predominantly out of the south; from southwest to southeast some of the time; and from the north and northeast in the winter months.

The air quality of rural areas in the three States is characterized as extremely good. Due to the sparse rural populations and its primary devotion to agricultural land uses, there is minimal potential for air quality degradation from point sources. However, fugitive airborne dust related to agricultural activities is present within the atmosphere at various times. Dust levels can occasionally be significant during periods of high winds, especially because these high velocities often occur during seasons when the agricultural fields have been recently worked and or bare.

##### **3.1.2 Impacts and Mitigation**

The potential for air quality degradation from CAFOs occurs at two separate phases. The initial construction or expansion of CAFOs may result in increased airborne dust from various unearthing and grading activities. During this phase, fugitive dust concentrations may also increase due to truck traffic along unimproved roads, and with construction of the animal barns and waste water lagoons. These effects constitute short-term, adverse impacts that are mitigated through wetting or application of chemicals for dust suppression, re-vegetation, and covering open areas. CWA provides EPA with no authority to regulate facility construction per se and it is not proposing to regulate facility construction under the reissued permits.<sup>6</sup> EPA will continue to

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<sup>6</sup>Storm water discharges from construction affecting more than five acres (including construction of new source CAFOs) is already regulated under separate general NPDES permits in Texas, Oklahoma, and New Mexico. Those permits require construction site operators to develop and implement BMPs avoiding or reducing the discharge of pollutants in storm water drainage from their sites. Because they are not new source permits, however, providing discharge authorization under those permits is not subject to NEPA and EPA does not consider potential air quality impacts in accepting NOIs.

evaluate construction related impacts in site-specific NEPA review of new source CAFOs under the reissued general permits.

The second phase is operation of the facilities. Operational activities create fugitive dust from truck traffic associated with transporting equipment and animals on and off site, as well as movement of employees and supplies such as feed materials. Even though the volume of fugitive dust emissions is minimal in comparison to fugitive dust emissions which result from other activities in the area, including dust storms, and agricultural practices, these effects constitute short-term, adverse impacts that are mitigated through planting and maintenance of vegetative ground cover, as well as wetting or covering surfaces that create airborne dusts. EPA will also continue to consider these effects in site-specific NEPA review of new source CAFOs under the reissued general permits. Air impacts associated with odors are evaluated in Section 3.10.

### **3.2 Surface Water, including 100-Year Flood Plain**

#### **3.2.1 Existing Conditions**

Flood plains serve an important role in flood control through the storage of flood waters, slowing the speed of flood waters, reducing peak flows and the height of flood waters, and lessening erosion damage to crops and downstream property. The 100-year flood plains are delineated on maps of designated Flood Hazard Management Areas. CAFOs may be located in or near a 100-year flood plain, and/or have surface water discharge(s) to tributaries, creeks, streams, wetlands, lakes, rivers, and other waters of the U.S. in Texas, New Mexico and Oklahoma.

#### **3.2.2 Impacts and Mitigation**

CAFOs (e.g., barns and lagoons) located within the 100-year flood plain may reduce the overall carrying capacity of the flood plain and cause an increased potential for flooding in upstream areas. Some CAFOs may have no alternative to locating such facilities in flood plains, however, and EPA lacks authority to directly regulate facility construction under NPDES general permits. In site-specific NEPA review of NOIs for new source CAFOs, EPA considers the effects of such construction and, under appropriate circumstances, e.g., availability of upland sites, may deny coverage under the general permits on the basis of a facility's avoidable adverse effects on a flood plain.

The proposed general permits prohibit the discharge of waste water to waters of the U.S. except when rainfall events, either chronic or catastrophic, cause an overflow from a lagoon designed, constructed, and operated to contain all process generated wastewater plus contaminated runoff a 25-year, 24-hour rainfall event for the location of the CAFO. Furthermore, all discharges to containment structures must be composed entirely of waste/wastewater from the proper operation and maintenance of the CAFO. The disposal of any other materials to containment structures is prohibited by the proposed NPDES General Permits, which require the use of best management practices (BMPs) specifically designed to assure compliance with the "no discharge" limitation. BMPs utilized by CAFO operators include

measures, as appropriate, to minimize waste/waste water volumes generated from confinement and maintenance areas, manage runoff from these areas, and ensure that waste water containment structures are adequately designed, constructed, operated, and maintained. To avoid spills of waste/wastewater from retention lagoons and animal holding pens to surface waters during flood events, the general permits will contain a provision requiring that such facilities located in the 100 year flood plain be protected from inundation or flooding.<sup>7</sup>

CAFOs determined to be, or which may reasonably be expected to be, causing or contributing to a violation of an applicable water quality standard, are not eligible for coverage under the proposed general permits and must seek coverage under an individual NPDES permit imposing additional controls. Discharge of process waste waters from lagoons, and animal confinement and maintenance areas to waters of the U.S., either directly or by means of a subsurface hydrologic connection, is prohibited. Discharges of waste, wastewater, or contaminated runoff from land application areas to waters of the United States is also prohibited. There shall be no water quality impairment to public and neighboring private drinking water wells due to waste handling at the permitted facility. All wastes from dipping vats, pest and parasite control units, and other facilities utilized for the management of potentially hazardous or toxic chemicals shall be handled and disposed of in a manner such as to prevent pollutants from entering the waste water retention structures. Dead animals shall be disposed of within three days and in a manner to prevent contamination of surface waters of the U.S. and not create a public health hazard. Appropriate measures necessary to prevent and clean up spills of any toxic and other pollutant shall be taken, as specified in the PPP, and any spill must be reported to EPA and the State/Indian Tribe with jurisdiction over the area of the spill..

Based on the above design requirements, discharges from properly operated and maintained CAFO waste/wastewater retention lagoons are infrequent. Because they occur as the result of episodic weather patterns, it is infeasible to estimate an average frequency for such discharges, but examination of long term rainfall records from the vicinities of Stephenville and Amarillo, Texas provides some perspective on the issue. In Stephenville (where the 25 year/24 hour storm event would yield about 7.5 inches of rain), there were six chronic storm events and two catastrophic events which might have resulted in allowable discharges from 1918 through 1995. In Amarillo (where the 25 year/24 hour storm event yields about 4.5 inches of rain), there were ten chronic storm events and one catastrophic storm event from 1949 through 1998 which might have resulted in allowable discharges from 1949 through 1998. Adverse impacts to surface waters may occur from either type of discharge. In a worst case scenario, pollutants (e.g., nitrate-nitrites, ammonia nitrogen, phosphorous, and turbidity) could enter a surface water, causing eutrophic conditions characterized by increased productivity, algal blooms, and depletion of dissolved oxygen to the detriment of many species of downstream aquatic life. (See also Section 3.10). The probability of such a worst case overflow is, however, dependent on soil characteristics, slope characteristics, the distance to the nearest surface water body, the degree of dilution associated with the storm event, and the amount of waste/wastewater in the lagoon at the

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<sup>7</sup> The corresponding provision at Part II.D.1(d) of the proposed permits warrants clarification.

time of the discharge. In most instances, the receiving waters would probably be at or near flood stage from the storm event, rendering instream pollutant concentrations attributable to CAFO retention structure discharges relatively small.

EPA proposed, in Part VI.B.(2) of the impaired watershed general permits, that waste/wastewater retention lagoons “should include a top freeboard capacity of three feet and, in no cases less than two feet” instead of the corresponding requirement for non-impaired watersheds of “two feet and in no case less than one foot.” With this proposed provision, EPA intended to require that operators in impaired watersheds provide additional retention structure freeboard to further minimize the frequency of discharges. Comments received to date suggest these provisions may be confusing, largely because the term “freeboard” has different meanings, varying among different types of CAFOs and different types of retention structures.

EPA Region 6 is thus examining other options to achieve the same purpose. One option is to simply require all operators in impaired watersheds to provide some amount, e.g., 10%, of additional retention capacity (above the 25 year, 24 hour storm event design) in impaired watersheds. Facility operators could comply with this requirement either by enlarging existing lagoons or by constructing secondary lagoons adjacent to existing lagoons. Another approach might be requiring different expansions in different areas. Operators could be required to expand their retention capabilities to better serve local needs. In East Texas, for example, operators might be required to provide more retention capacity than in operators in West Texas because waste/wastewater needs to be stored for longer periods in areas of greater rainfall.

Operators must perform a nitrogen balance analysis as part of their PPP preparation. These analyses are used to determine the volume of manure that can be land applied, based on available acreage of various soil types and crops, and known nutrient uptake rates. Recognizing the land acreages available for assimilating the nitrogen content of waste water generated over the course of a year, seasonal variation in crop nitrogen requirements, and soil conditions, the adverse impact of nitrogen on surface waters from runoff of land applied waste water is predicted to be minimal. In comparison to nitrogen, however, a higher potential exists for adverse impacts associated with phosphorus in runoff at land application sites. Monitoring has demonstrated a positive correlation of increased dissolved phosphorous concentrations in runoff associated with land used for animal waste application (manure and liquid effluent). When animal waste is land applied in compliance with plant nitrogen uptake restrictions, phosphorus is over applied by a factor of 2.5 to 3 times the crop requirements.

The proposed general permits include the following measures to mitigate potential adverse phosphorus impacts and reduce other nutrients occurring in runoff associated with the land application of waste water:

A. Each CAFO permittee must conduct analytical tests to determine the nutrient contents of: 1) the manure and waste water generated by the facility; and 2) the soils in the land application

areas prior to the first land application event, then once per year<sup>8</sup>, thereafter. The application rate must be based on agronomic crop requirements for nitrogen until the concentration of phosphorus in the soil increases to the limit specified by State/Tribe in which the CAFO is located, as determined from results of the nutrient sampling and testing. When the soil phosphorus concentration exceeds this limit, manure must be applied at rates based on the phosphorus need of onsite vegetation. If soil tests indicate that the phosphorus threshold level will be exceeded during the permit term, the CAFO operator should obtain access to additional land application areas or make other adjustments that are necessary to comply with the permits.

B. Whenever CAFO generated manure is to be used offsite at agronomic rates, the CAFO operator must provide current and accurate manure testing data that can be used by the offsite applicator to establish agronomic rates of manure application. The CAFO operator must provide advice to the offsite applicator concerning proper application and obtain information from the offsite applicator concerning the location and acreage of the proposed offsite land application areas. The CAFO operator must keep all records on offsite disposal, including information on the quantities of manure sold or given away, and dates of the sale or delivery, excluding incidental amounts (e.g., a pickup load to an individual). All records must be kept at the site.

C. Some offsite treatment/disposal of CAFO waste/wastewater is performed by third parties and discharges from such offsite treatment/disposal were not regulated under the expired general permits. As noted in Section 2 of this EA, EPA is now considering regulation of offsite treatment/disposal practices which pose a significant potential for polluting waters of the United States. Under EPA's current thinking (which has been influenced by comments received since it proposed these general permits), land application rates resulting in soil phosphorus loading exceeding 130 lbs/acre are not proper agricultural practices exempt from NPDES regulation and discharges from treatment/disposal operations resulting in greater soil loading rates are subject to regulation under CWA and to the terms of the proposed general permits. Because soil loading rates greater than 400 lbs/acre (300 lbs/acre in nutrient impaired watersheds) have a reasonable potential to cause or contribute to exceedances of applicable water quality standards, offsite treatment/disposal operators applying CAFO generated waste/wastewater at greater rates will be required to obtain discharge authorization, if any, under individual NPDES permits, enabling review of their operations on a site-specific basis.

### **3.3 Geology, including Ground Water**

#### **3.3.1 Existing Conditions**

Geologic deposits in the three State area are of Pliocene Age, with younger deposits of Pleistocene Age. Those of Pliocene Age include the Ogallala formation and the Laverne

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<sup>8</sup> The proposed permits would have required soil testing on a quarterly basis. Based on comments received to date, however, EPA Region 6 believes annual composite sampling would provide sufficient data to enable CAFO operators to effectively manage their land application rates.

formation. These undifferentiated deposits, along with recent dune sand and alluvial deposits, form hydrologic units that function as reservoirs for ground water. These are some of the principal sources of ground water, and undifferentiated deposits are moderately permeable with thickness ranging from approximately 0 to 800 feet.

Ground water is present in the pore spaces of unconsolidated sand and gravel particles or in rock fractures and other openings. In general, ground water occurs under either confined or unconfined conditions. Confined conditions exist when the potentiometric head exceeds the elevation at the top of the overlying impermeable unit. Unconfined conditions exist where the upper surface of the water table is not confined by an overlying impermeable unit and the water is free to fluctuate.

### **3.3.2 Impacts and Mitigation**

One ground water concern is the seepage of waste water contained in the treatment lagoons and evaporation basins. A second concern is the ground water may become contaminated from the over application of waste water on cropland. Pollutants of concern include nitrate-nitrites, ammonia nitrogen, phosphorous, total suspended solids, and enteric bacteria. High levels of nitrates can be toxic to human infants and young farm animals.

To protect ground water, a CAFO must provide a liner (e.g., clay layer, plastic membrane or other type of blanket) to adequately prevent a significant hydrologic connection between liquids contained in the waste water lagoons (primary retention structures and secondary evaporative basins) and waters of the U.S. In addition, BMPs are employed to ensure the integrity of the lagoon during facility operations, such as preventing domestic livestock from entering and damaging the liners, not allowing trees to grow where the roots could eventually penetrate and damage the liner, and routinely inspecting the liner. A liner that has been damaged should be evaluated by a Professional Engineer with the NRCS, or by a ground water scientist within 30 days and repairs implemented as soon as possible. Properly constructed lagoon liners meeting EPA's requirements will sufficiently limit permeability to minimize or prevent the seepage of pollutants to ground water. Depths to ground water (from 100 to 250 feet or more) further reduce the potential for adverse impacts to ground water resources from a CAFO lagoon.

Specific land application rates are developed for each CAFO site based on known agronomic uptake requirements for nitrogen and phosphorus for the specific crop and soil type. BMPs to mitigate adverse ground water impact from land application of waste water include quarterly checks of soil conditions and application rates; monitoring concentrations of nutrients, including phosphorus, for increases over time within the soil profile; replacing the type of crop with one that has higher nutrient requirements; enlarging the land application area; and reducing or eliminating land application at a particular location.

Based on the general permit limitations, requirements and management practices, adverse ground water impacts resulting from CAFO land application will be mitigated or reduced to acceptable levels.

### **3.4 Topography and Soils, including Prime Farmlands**

#### **3.4.1 Existing Conditions**

Many topographies and soil series are present within the three States. Soils designated as “prime farmland” by the NRCS (formerly the U.S. Soil Conservation Service) are recognized, important natural resources. Prime farmland soils, in combination with the growing season and moisture supply, are those needed for a well managed soil to produce a sustained high yield of crops in an economic manner.

#### **3.4.2 Impacts**

Topography and soils may be adversely impacted by CAFO construction and operation, including changes in elevation and soil loss. Soil losses occur through disposal of excess spoil materials and from erosion. Any CAFO related loss of NRCS designated prime farmland soils constitutes a long-term, adverse impact. EPA will continue to consider these potentially adverse effects in its site-specific NEPA review of new source CAFOs.

### **3.5 Vegetation, Wildlife, and Wetlands**

#### **3.5.1 Existing Conditions**

Natural vegetation varies across the three States and includes mixed grass prairies (e.g., species such as big bluestem, little bluestem, and Indian grass), and short grass prairies (e.g., species such as buffalo grass, blue gramma, sandsage, and yucca are found at the higher elevations). Some areas are characteristically free from brush, but mesquite, prickly pear cactus, and yucca have invaded parts of the States.

Bottomland habitats include oaks, cottonwood, willow, elm, and hackberry. Sandy lands primarily support shinnery oak, and sandsage and junipers have spread out of some of the breaks onto the plains.

There is also a wide diversity of wildlife in the three States. Lakes, including playas, not only provide a winter home for migrating waterfowl, primarily Canada geese and mallards, but also for many species of songbirds and raptors. Species common during the spring and summer months include: turkey vulture, Mississippi kite, American kestrel, red-tailed hawk, marsh hawk, and Harris hawk. Species common in the fall and winter months include: prairie falcon, rough-legged hawk, and Cooper’s hawk.

Game birds include turkey, ring-necked pheasant, bobwhite quail. Birds of the grasslands include many species that typically occur over a wider region, such as the roadrunner, house finch, yellow warbler, willow flycatcher, cedar waxwing, western kingbird, and golden eagle.

Large mammals include coyotes, bobcats, badgers, skunks, raccoons, porcupines, and

foxes. Cottontail rabbits, jackrabbit and prairie dogs are also relatively abundant.

Amphibians and reptiles include frogs, toads, snakes and turtles, such as the plains spadefoot toad, Counce's spadefoot toad, western spadefoot toad, plains leopard frog, Great Plains toad, green toad, red spotted toad, spotted chorus frog, yellow-mud turtle, Texas horned lizard, round-tailed horned lizard, Great Plains skink, Texas blind snake, and Plains black-headed snake.

Wetlands are important wildlife habitats, which are "jurisdictional" areas delineated by the U.S. Army Corps of Engineers (COE) or the U.S. Department of Agriculture (i.e., on agricultural lands), pursuant to Section 404 of the Clean Water Act.

### **3.5.2 Impacts and Mitigation**

Adverse impacts occur when native vegetation and wildlife habitat are converted to CAFOs and croplands. These effects (i.e., clearing and leveling of previously natural areas) constitute adverse impacts, recognizing some facilities will be located at existing farms where the native vegetation had already been removed by prior agricultural land uses. Even though the amount of native vegetation impacted may be small, construction adversely impacts resident wildlife (mammals, amphibians, and reptiles) species through the loss of habitats. In some instances, CAFO construction may also fragment wildlife habitat, rendering remaining habitat insufficient to support some resident wildlife species. Similar adverse impacts are may not result to most birds species because of their increased mobility to other available habitats.

Placement of fill material in jurisdictional wetlands is subject to Section 404 of the Clean Water Act, administered jointly by the COE and EPA. In coordination with the COE, a GP permittee may require a Section 404 permit depending on the amount of fill material to be placed into a wetland. Also, certain facilities could potentially impact wetlands if land application occurs in close proximity to a wetland area at the site. To mitigate this potential adverse impact, CAFOs can restrict the application of effluent by controlling the pivot of the irrigation system(s) to avoid applying waste water over the wetland. By stopping the irrigation system before it passes over the wetlands, operational (discharge) impacts should be effectively avoided. Under the COE's Section 404 permit, wetlands mitigation (e.g. constructed wetlands) also helps to insure no net loss of this important resource.

Potential impacts CAFO construction and operation may have on wildlife and wetlands are largely dependent on site-specific factors, i.e., presence of habitat in the area affected by the CAFO. EPA will thus continue to consider adverse effects on wetlands and other wildlife habitat in its site-specific NEPA review of NOIs submitted by new source CAFOs.

## **3.6 Threatened and Endangered Species**

### **3.6.1 Existing Conditions**

The U.S. Fish & Wildlife Service (FWS) has listed a large number of threatened and endangered species in the three states covered by the proposed general permits. They are listed in Appendix C to this EA.

### **3.6.2 Impacts and Mitigation**

Because CAFO construction and operation may affect some or all of the species listed as occurring in Texas, Oklahoma, and New Mexico, EPA must consult with FWS, in accordance with Section 7(a)(2) of the Endangered Species Act (ESA) to insure its issuance of the permits is unlikely to jeopardize the continued existence of listed species or result in adverse modification of critical habitat. EPA initiated formal consultation on the proposed general permits for Texas with the FWS field office in Arlington, Texas, on November 9, 1998, and provided additional information for FWS's use in the consultation on December 4, 1998. On December 18, 1998, FWS sent EPA Region 6 a draft biological opinion on issuance of the Texas general permits. EPA Region 6 is now considering that draft opinion and it seems likely additional consultation will occur before FWS issues a final biological opinion.

In its draft biological opinion, FWS opined that reissuance of the CAFO general permits was unlikely to jeopardize listed species (or species proposed for listing) or result in destruction or adverse modification of critical habitat. FWS further opined that issuance of the proposed permits would not directly kill listed species, but anticipated that wet weather discharges from permitted facilities to the Canadian River in Oldham, Potter, Hutchinson, Roberts and Hemphill counties and to other watersheds of "critical concern, high priority, or special concern" (listed in Appendix D to this EA) might cause an unquantifiable number of sublethal ("harm or harass") takes of listed species. EPA intends to further discuss the potential for sublethal takes with FWS and, if needed, develop reasonable and prudent measures for minimizing or avoiding those takes before FWS issues a final biological opinion and EPA issues the final permits. Reasonable and prudent measures suggested by FWS's draft opinion include denying discharge authorization for new CAFOs in "buffer zones" within watersheds important to listed species, requiring existing CAFOs in those "buffer zones" to undergo site-specific consultation and/or comply with the more stringent terms of the "impaired watershed" permits.

Another potential reasonable and prudent measure EPA is discussing with FWS is use of a screening mechanism for NOI submission by CAFOs not subject to NEPA review. In consultations on some prior general permit actions, EPA and FWS have developed screening procedures under which prospective permittees investigate potential effects of their operations on listed species and critical habitat before submission of NOIs. By using such procedures, EPA hopes to eliminate the need for consultation on all individual projects so both EPA and FWS may focus their attention and resources on those which may adversely affect listed species or critical habitat. An example of such a screening checklist (used under general permits authorizing storm water discharges from construction activities) is attached to this EA as Appendix E. It should be noted however, that the checklist, if any, developed for these CAFO permits may differ significantly from that example when consultation terminates or EPA takes its final permit action. It currently appears, however, that some type of site-specific endangered/threatened species

review will be associated with NOI processing under the proposed permits.

EPA has not to date initiated formal consultation on the proposed general permits for Oklahoma and New Mexico. EPA hopes that experience gained in the consultation on the Texas permits may render consultations in Oklahoma and New Mexico more efficient.

### **3.7 Historical and Archeological Resources**

#### **3.7.1 Existing Conditions**

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and other physical evidence of human activities considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources can be divided into three major categories: prehistoric and historic archaeological resources, architectural resources, and traditional cultural properties. Prehistoric and historic archaeological resources are locations where human activity measurably altered the earth or left deposits of physical remains (e.g., projectile points, bottles). Architectural resources include standing buildings, dams, bridges, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for protection under existing federal cultural resources laws. Traditional cultural properties include archaeological resources, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the persistence of their traditional culture. All three categories of cultural resources occur in Texas, Oklahoma, and New Mexico.

Through publication of this EA, EPA invites interested persons to participate in the National Historic Preservation Act (NHPA) section 106 process. “Interested persons” includes heads of local governments when the undertaking may affect historic properties within the local government’s jurisdiction; representatives of Indian Tribes in accordance with CFR Part 800.1(c)(2)(iii); owners of affected lands; and other interested persons when jointly determined appropriate by the EPA, the State Historic Preservation Officers (SHPOs), and the Advisory Council on Historic Preservation.

#### **3.7.2 Impacts and Mitigation**

In this permitting action, EPA must comply with NHPA §106, which requires it to consider the potential effects its action may have on cultural resources listed or eligible for listing in the National Register of Historic Places. Operation of a CAFO is generally unlikely to affect cultural properties. CAFO construction, however, may displace or destroy onsite cultural resources. Without due care, for example, excavation for construction of a retention basin could destroy subsurface archaeological sites. In earlier permit actions, EPA has sometimes addressed such potential effects by requiring performance of surface archaeological surveys before commencement of excavation operations and requiring that excavation be halted if subsurface properties are discovered. Re-initiation of excavation occurs only after the operator provides an opportunity for appropriate State Historic Preservation Offices to examine the site and, when appropriate, arrange for preservation or recovery of cultural properties. Obtaining such commitments from the operators of new and expanding new source CAFOs has been and will

probably continue to be a normal occurrence in EPA's site-specific NEPA review. Similar measures for smaller CAFOs not subject to NEPA review may be appropriate if they are engaging in construction activities which might adversely affect historic properties.

EPA's currently preferred mechanism for identifying situations in which facilities receiving discharge authorization under the CAFO general permits may adversely affect cultural properties, and for ensuring those adverse effects are appropriately considered and mitigated, is use of an NOI limitation. To obtain permit coverage, a CAFO operator would either: 1) certify that its activities do not adversely affect cultural properties, or 2) provide EPA a copy of its written agreement with the SHPO that outlines measures to be undertaken to mitigate or prevent adverse effects to cultural properties. Except for operators of new or expanding CAFOs, most operators would probably be able to certify to no adverse effect. Based on its intended use of this NOI mechanism, EPA determines that issuance of the proposed general permits will not adversely effect on cultural properties. This "no adverse effect" determination is being provided to the SHPOs in Texas, Oklahoma and New Mexico for concurrence as part of this EA.

### **3.8 Noise**

#### **3.8.1 Existing Conditions**

CAFOs are located in areas predominately used for agricultural purposes. Noise level increases result from sources such as: engine noise from cars, trucks, plows, tractors, farm and irrigation equipment, exhaust fans, and other machines associated with crop and animal production.

#### **3.8.2 Impacts and Mitigation**

Noise is generated during the construction phase by equipment used for CAFO site clearing and preparation and facility construction. This increase in noise is short-term and limited to the construction phase. During the operational phase, noise levels increase with the use of machinery (e.g., operation of backhoes), feed trucks, and other operational equipment (e.g., exhaust fans). The degree of noise impact relates to the distance from the source, timing, and length of disruption. For example, a noise generated in the early morning or during the late evening hours is considered to result in a greater adverse impact than one that occurred during the middle of the day. After construction activities are completed, most adverse effects are associated with equipment and transportation, including the evaporative fans which are used to help cool the animals, and trucks used to transport both animals and animal feed. These increased noise levels constitute periodic or short-term, adverse, impacts on nearby residents. EPA will continue to consider potentially adverse effects due to noise in its site-specific NEPA review of new source CAFOs.

### **3.9 Odor**

#### **3.9.1 Existing Conditions**

Ambient odors include those associated with the natural surroundings in the three State

agricultural environment. For example, multiple CAFOs already exist within the region, as well as oil and gas processing facilities. Odor impacts, however, are not consistently predictable, since odors can carry for several miles, depending on the source, weather conditions, and because odors affect people differently.

CAFO odors are a factor of site selection and of how effective or successful waste management practices prove to be. CAFO odors are strongest during flushing of livestock production barns, and during land application and withdrawal of lagoon wastewater. The potential for complaints increases where a CAFO is located less than two miles upwind of local residents (EPA, 1996).

### **3.9.2 Impacts and Mitigation**

There are a variety of odor causing chemicals produced by a CAFO, and no one chemical has been identified as the single responsible compound for producing odors. Hydrogen sulfide, an odor producing gas, is representative of other gases emitted by CAFOs.

Individual reactions to odor are different and influenced by personal preferences, experiences, opinions, and sensitivities. People living near a CAFO with odor problems may experience increased tension, depression, anger, fatigue, and confusion, compared to persons not located near CAFOs. Possible factors contributing to the potential for adverse impacts include the unpleasantness of the odor, the intermittent nature of the stimulus, learned aversions to the odor, direct physical irritation to nasal or respiratory passages, possible chemosensory disorders, and unpleasant thoughts associated with the odor.

CAFO PPPs must include BMPs to maximize odor prevention and/or control. These include using land to provide a buffer space between waste/wastewater lagoons and potentially affected populations, venting barns to limit the build-up of noxious fumes, and draining collection pits beneath each livestock production barn on at least a weekly basis. In addition, fluid levels in waste/ wastewater lagoons must be monitored to insure optimal depths for maximum micro-biologic activity and odor control. As warranted, additional measures may be developed in site-specific NEPA review of new source CAFOs, including development of vegetative buffers around lagoons, fields and production facilities; daily flushing of under floor catchment areas; mechanical aeration of waste/wastewater lagoons; and monitoring development filtering systems for air from production barns.

## **3.10 Public Health**

### **3.10.1 Existing Conditions**

CAFOs use a number of chemicals and cleaning agents. Following proper handling procedures helps to eliminate the risk of spills or other accidental exposure of materials and substances to storm water runoff. Such practices include good housekeeping, storing proper amounts of substances, neat arrangement of materials, no mixing of products, and proper disposal of materials. Other materials, including hazardous products, should be kept in original

containers unless they are not resealable. Original labels and material safety data sheets will be retained. If surplus products must be disposed of, manufacturers' or local and State recommended methods, and regulatory requirements, for proper disposal are to be followed.

*Pfiesteria* is a dinoflagellate which is highly toxic to fish under certain conditions. Blooms may also cause human health problems, including respiratory distress, vomiting, eye irritation, and memory loss. A direct cause and effect relationship between *Pfiesteria* and nutrient loading remains unproven, but this dinoflagellate is believed to have caused fish kills in eutrophic estuaries and tidal rivers receiving high nutrient inputs from animal feeding operations (poultry and hog farms). Those well publicized fish kills (and some possible effects on humans) occurred in the Indian River, Delaware; the Chesapeake Bay system; and the Albemarle-Pamlico Sound (Nuese River), North Carolina. *Pfiesteria* is not believed to be a problem in the three State area covered by the proposed permits and none of the watersheds to be covered by the impaired watershed permits are tidal.

### **3.10.2 Impacts and Mitigation**

Chemicals used by the facility for normal operation should not cause adverse impacts to the environment if proper procedures and precautions are observed. Under the proposed permits, CAFO PPPs must include the following BMPs to prevent or reduce serious spills:

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area on site. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of size, in accordance with regulatory requirements.

As a result of the national concern about *Pfiesteria*, EPA and others are involved with approaches to address potential causal factors, most notably, nutrient loading. For example, EPA Region 3 has formed a work group to develop short and long-term strategies to address *Pfiesteria* in mid-Atlantic states. Other EPA activities include developing a Coordinated Federal Research Strategy for *Pfiesteria* outbreaks, the National Nutrient Strategy, and strengthening the Non-Point Source (NPS) Program efforts to address nutrient controls in watersheds of concern. In coordination with these activities, EPA Region 6 will continue to recognize fish kills as a basis for CWA Section 303(d) listing, and to the extent consistent with its authority, address the effects of nutrients on watersheds.

Because issuance of the proposed permits is unlikely to result in any *Pfiesteria*-related

effects, they include no measures specifically directed towards avoiding such effects. Permit provisions avoiding nutrient loading to receiving waters are, however, consistent with the Agency's overall strategy to address *Pfiesteria* problems. Moreover, the proposed permits provide no discharge authorization to new source CAFOs located in Texas' coastal zone. Such facilities must apply for TNRCC issuance of individual permits to accommodate interagency coordination under Texas' federally approved coastal zone management plan, which should further reduce the likelihood that CAFOs regulated under this permit will cause or contribute to public health problems.

### **3.11 Land Value**

#### **3.11.1 Existing Conditions**

The environmental settings of CAFOs are agricultural. Major agricultural operations in the three States include wheat, corn, rice, peanuts, sorghum, alfalfa, and grazing. There are no known zoning ordinances, or State/regional or area master plans, to regulate changes in agricultural land use.

#### **3.11.2 Impacts**

A CAFO may adversely impact land and property values of residences located adjacent or near to the facilities, and also negatively affect the potential for secondary development in the local communities.

### **3.12 Environmental Justice**

EPA defines Environmental Justice (EJ) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of "fair treatment" is not to shift risks among populations, but to identify and address, as appropriate, disproportionately high and adverse impacts (i.e., on minority or low income communities).

CAFO construction and operation may affect minority or low income communities both negatively, e.g., by exposing them to disproportionate odor effects, and positively, e.g., by offering employment opportunities. Such effects may only be evaluated on a site-specific basis, however, and EPA thus intends to continue its consideration of EJ issues in site-specific NEPA review of new source CAFOs.

### **3.13 Cumulative Impacts**

Based on the size and scope of a CAFO to be covered under the proposed GPs, in combination with its limitations, requirements, "reopener clause," and BMPs, EPA has determined there will be minimal, if any, adverse cumulative impacts from issuance of the proposed general permits. EPA considered the potential for cumulative effects in site-specific NEPA review of new source CAFOs under the expired permits and will continue to consider

cumulative effects in similar review under the reissued permits.

EPA Region 6 uses its Cumulative Risk Index Analysis (CRIA) to evaluate new source CAFOs on a sub-watershed basis prior to providing them general permit coverage. Similar risk evaluation components are found in the Human Health Risk Index used for Regional enforcement targeting and in the Region 6 Environmental Justice Risk Index. The CRIA considers environmental vulnerabilities and potential effects of individual CAFOs by watershed subunits, called Hydrologic Unit Codes, or HUCs. A HUC, the methodology's base analytical unit, was created by merging watershed area data and State stream segment information. Cumulative risks are identified through evaluation of areas of regulated and unregulated CAFOs; environmental vulnerabilities (e.g., ground water depth, soil permeability); and impacts from known CAFO projects specific to each HUC. Cumulative risks criteria are summed using a mathematical algorithm. Key components of the algorithm are Area of known Individual CAFO projects ( $A_I$ ), Area of the Watershed Subunit ( $A_{WS}$ ), Degree of Vulnerability ( $D_V$ ), and Degree of Impact ( $D_I$ ).

The CRIA algorithm is as follows:

$$CRIA = [\Sigma A_I / A_{WS}] D_V D_I$$

where:

CRIA = Potential for significant environmental risk

$A_I$  = Area of known individual projects

$A_{WS}$  = Area of watershed subunit

$D_V$  = Degree of Vulnerability for subunit (e.g., ground water depth, rainfall, soil permeability, populated areas).

$D_I$  = Degree of Impact produced by regulated CAFOs within the watershed subunit (e.g., animal population density, land application, lagoon systems).

The CRIA is calculated for each CAFO in the HUC. Total areas ( $A$ ) of known projects in a HUC are scored from 1 to 4 based on the percentage of the watershed area they represent. Vulnerability and impact factors are identified, and criteria for each are determined. Each  $D_V$  and  $D_I$  criteria are scored from 1 to 5.

The calculations involved:

- 1) summing the areas for known projects ( $A_I$ ) and determining what percent of a watershed subunit is affected.  $([\Sigma A_I / A_{WS}] \times 100)$ ; these percentages are scored on a 1 to 4 scale [no project(s) = 0 score].
- 2) summing the vulnerability and impact criteria scores, and calculating the average

for  $D_v$  and  $D_i$  respectively;

- 3) multiplying the A score by the average  $D_v$  score by the average  $D_i$  score.

The maximum score possible in a watershed subunit (HUC) is 100. The summation factor is cumulative for CAFOs in the HUC. Maximum for  $[\Sigma A_i / A_{ws}]$  is 4, maximum for  $D_v$  is 5, maximum score for  $D_i$  is 5.

$$\begin{aligned} \text{CRIA} &= [\Sigma A_i / A_{ws}] \times (D_v) \times (D_i) \\ &= [4] \times (5) \times (5) = 100 \end{aligned}$$

Known individual and cumulative CRIA scores (i.e., area, vulnerability, and impact criteria) are compiled for the CAFOs in a HUC. The total HUC scores, as well as the individual site scores for specific criteria, provide meaningful insight to potential impacts. This is true for the variation of scores at all sites, and scores of 5 and 4 are important considerations at one site and multiple sites, particularly when they correlate to both vulnerability and impact criteria. For example, high vulnerability and impact scores (e.g., phosphorus budget, density of CAFOs, proximity of CAFOs, ground water protection, odor, and wildlife) could constitute predicted adverse cumulative impacts on the affected human environment and/or natural resources. When it determines there is a significant potential for such impacts, EPA may prepare a site or watershed-specific EIS and, under appropriate circumstances, require that new source CAFO submit an application for an individual permit.

#### **4.0 UNAVOIDABLE ADVERSE IMPACTS**

In NEPA review of this general permitting action, it is infeasible for EPA to consider and assess all potentially significant environmental impacts which may be associated with individual new source CAFOs; the potential for those impacts is frequently affected by site-specific factors. This EA, however, documents EPA's identification and assessment of those impacts which are reasonably foreseeable at the general permit issuance stage, together with proposed permit conditions and procedures with which they may be reduced to acceptable levels. Except for those facilities which have already been reviewed under NEPA under the expired permits, each new source CAFO which seeks coverage under the reissued permits will be required to submit an EID to enable site-specific NEPA review as a condition of obtaining discharge authorization.

#### **5.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

CAFO construction and operation generally results in loss of NRCS designated prime farmland soils, loss of energy expended, and some loss of onsite wildlife habitat. EPA will continue to consider those losses in its site-specific NEPA review of NOIs submitted by new source CAFOs. By issuing the general permits, EPA will also be committing significant amounts of staff resources required to administer and enforce them.

## **6.0 COORDINATION**

As part of its NEPA review process, EPA is providing copies of this EA and associated FNSI to approximately 200 interested Federal and State agencies, environmental groups, and individuals for review and comment. Written comments should be submitted within 30 days to:

Gregg A. Cooke  
EPA Region 6 Regional Administrator  
Attention: Robert D. Lawrence (6EN-XP)  
1445 Ross Avenue  
Dallas, Texas 75202-2733

## **LIST OF ACRONYMS**

BAT	Best Available Technology
BCT	Best Conventional Technology
BMPs	Best Management Practices
CAFO	Concentrated Animal Feeding Operations
CFR	Code of Federal Regulations
COE	U.S. Corps of Engineers
CNMP	Comprehensive Nutrient Management Plan
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FNSI	Finding of No Significant Impact
FWS	U.S. Fish and Wildlife Service
GIS	Geographical Information System
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Services
NRHP	National Register of Historic Places
PPP	Pollution Prevention Plan
SHPO	State Historic Preservation Officer
THC	Texas Historical Commission
TNRCC	Texas Natural Resource Conservation Commission

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